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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
- 09/821,361 -	- 03/29/2001 -	Noriaki Sakamoto	10417-074001	3784

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EXAMINER

CHU, CHRIS C

ART UNIT PAPER NUMBER

2815

DATE MAILED: 12/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/821,361

Applicant(s)

SAKAMOTO ET AL.

Examiner

Chris C. Chu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 4, 10 and 13 - 28 is/are pending in the application.
- 4a) Of the above claim(s) 10, 13 - 22 and 24 - 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4, 23 and 28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Request for Continued Examination***

1. A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 15, 2004 has been entered. An action on the RCE follows.

### ***Response to Amendment***

2. Applicant's amendment filed on October 18, 2004 has been received and entered in the case.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 4 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Lin et al. (U.S. Pat. No. 5,273,938).

Regarding claim 4, Lin et al. discloses in e.g., Fig. 3 a semiconductor device comprising:

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- a first (17) and a second (15) semiconductor chip which are electrically connected to each other (column 3, lines 25 – 27);
- a first die pad (19 under the element 17) to which said first semiconductor chip is fixed;
- a second die pad (19 under the element 15) to which said second semiconductor chip is fixed;
- at least one bridge (13, at the middle) electrically connecting said first and said second semiconductor chip;
- external connecting electrodes (13, located at the out-side of the elements 19 and surrounding the elements 19) provided to surround areas where said first and said second semiconductor chip are located, at least a portion of the rear surface of them serving as an electrode to be externally connected (see Fig. 6);
- first metallic wires (18, located at the out-side of the element 19) which electrically connect said first and said second semiconductor chip to said external connecting electrodes, respectively;
- second metallic wires (18, at the middle) which electrically connect said first semiconductor chip, said at least one bridge and said second semiconductor chip; and
- insulating resin (20) which seals said first and said second semiconductor chip, said external connecting electrode, and said first and said second metallic wires,
- wherein said insulating resin (20) separates said first and second die pad, said at least one bridge and said external connecting electrodes from one another,

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and said second metallic wires are coupled to said first and said second semiconductor chip using a ball bond and coupled to said at least one bridge using a stitch bond.

- further comprising a plurality of recesses (at the places of the elements 13 and 19) in a rear surface of said insulating resin, the rear surface of said first and second die pad and said external connecting electrodes being exposed within said recesses, wherein the at least one bridge (13, at the middle) is exposed within at least one of the recesses.

Furthermore, as to the language on lines 4 ~ 5 from the bottom of claim 4, “said second metallic wires are coupled to said first and said second semiconductor chip using a ball bond and coupled to said bridge using a stitch bond”, even though product-by-process claim is limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process. In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted). A “product by process” claim is directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ 116; In re Wertheim, 191 USPQ 90 (209 USPQ 254 does not deal with this issue); and In re Marosi et al., 218 USPQ 289 final product per se which must be determined in a “product by, all of” claim, and not the patentability of the process, and that an old or obvious product, whether claimed in “product by process” claims or not.

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Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

Regarding claim 28, Lin et al. discloses in e.g., Fig. 3 the at least one bridge (13, at the middle) being arranged between said first and second semiconductor chips.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. in view of Fjelstad (U.S. Pat. No. 6,001,671).

While Lin et al. disclose a plurality of recesses in a rear surface of said insulating resin, Lin et al. does not disclose the rear surface of the insulating resin protruding from the rear surface of the die pads and the external connecting electrodes. Fjelstad teaches in e.g., Fig. 2E a rear surface of an insulating resin (140 and 100'-polyimide) protruding from the rear surface of a die pad (115') and external connecting electrodes (110'). It would have been obvious to one of ordinary skill in the art at the time when the invention was made to modify Lin et al. by forming the rear surface of the insulating resin to protrude from the rear surface of the die pads and the external connecting electrodes as taught by Fjelstad. The ordinary artisan would have been motivated to modify Lin et al.

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in the manner described above for at least the purpose of providing heat dissipation from the chips into an external device, e.g., PWB (column 5, lines 46 – 54).

### *Response to Arguments*

7. Applicant's arguments with respect to claim 4 have been considered but are moot in view of the new ground(s) of rejection by different interpretation of the previously applied reference.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chris C. Chu whose telephone number is 571-272-1724. The examiner can normally be reached on 11:30 - 8:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 517-272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>.


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Should you have questions on access to the Private PAIR system, contact the  
Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chris C. Chu  
Examiner  
Art Unit 2815

c.c.

Monday, December 20, 2004

  
**GEORGE ECKERT**  
**PRIMARY EXAMINER**